

EXPLAIN EXPLICITLY THE OPERATION OF THE DIGITAL RELAY

A digital relay consists of the following main parts: processor, analogue input system, digital output system and independent power supply. Figure 1 presents a simplified block diagram of a digital relay.

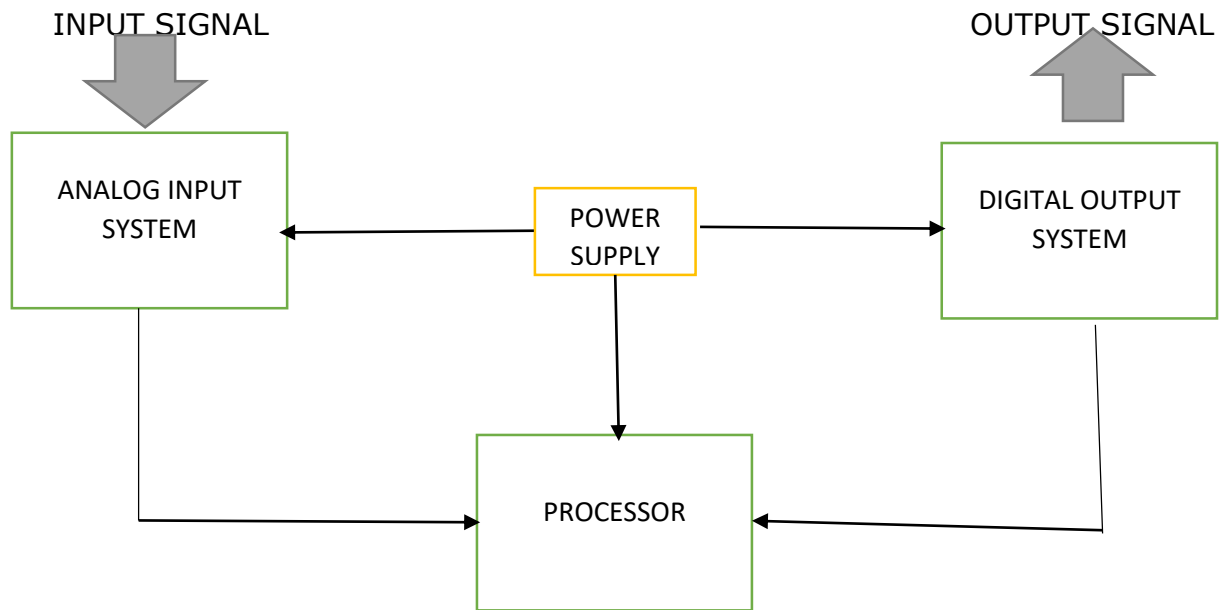


Fig. 1. Block diagram of a digital relay

Digital relaying involves digital processing of one or more analog signals in three steps:

1. Conversion of analogue signal to digital form
2. Processing of digital form
3. Boolean decision to trip or not to trip.

The main difference between digital and conventional relays pertains to the method of input signal processing. In the case of digital relays, input signals are converted into digital form within the analogue input system before being analysed by the processor. Digital relays possess advanced programmable functionality providing high performance level, flexibility as well as additional monitoring capabilities. At present, their application is mainly in transmission system and generation unit protection. The main advantages and drawbacks are listed below.

ADVANTAGES OF DIGITAL RELAY

1. High level of functionality integration.
2. Additional monitoring functions.
3. Functional flexibility.
4. Capable of working under a wide range of temperatures.
5. They can implement more complex function and are generally more accurate
6. Self-checking and self-adaptability.
7. Able to communicate with other digital equipment (peer to peer).
8. Less sensitive to temperature, aging
9. Economical because can be produced in volumes
10. More Accurate.
11. plane for distance relaying is possible
12. Signal storage is possible

LIMITATIONS OF DIGITAL RELAY

1. Short lifetime due to the continuous development of new technologies.
2. The devices become obsolete rapidly.
3. Susceptibility to power system transients.
4. As digital systems become increasingly more complex they require specially trained staff for Operation.
5. Proper maintenance of the settings and monitoring data.